

1 **Supplementary Information for**

2

3 **Dimer esters in  $\alpha$ -pinene secondary organic**  
4 **aerosol: Effect of hydroxyl radical, ozone,**  
5 **relative humidity and aerosol acidity**

6 **K. Kristensen<sup>1</sup>, T. Cui<sup>2</sup>, H. Zhang<sup>2\*</sup>, A. Gold<sup>2</sup>, M. Glasius<sup>1</sup>, and J.D. Surratt<sup>2</sup>**

7

8 <sup>1</sup>Department of Chemistry and iNANO, Aarhus University, DK-8000 Aarhus C., Denmark

9 <sup>2</sup>Department of Environmental Sciences and Engineering, Gillings School of Global Public Health,  
10 University of North Carolina at Chapel Hill, Chapel Hill, NC, 27599, USA

11

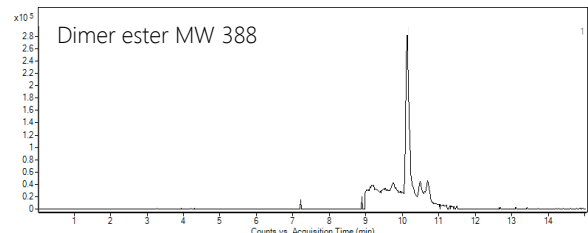
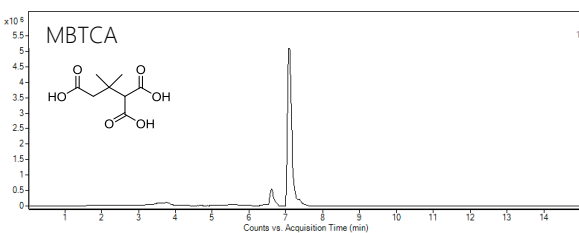
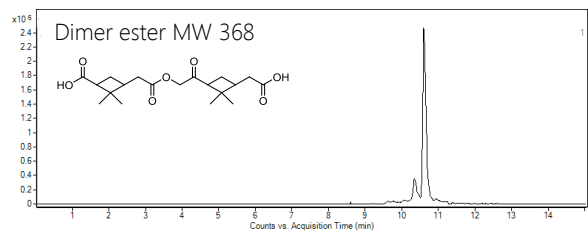
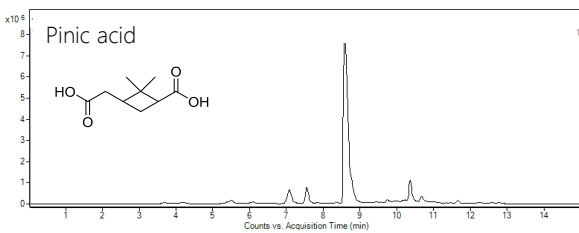
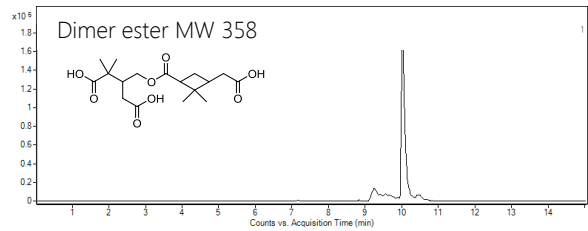
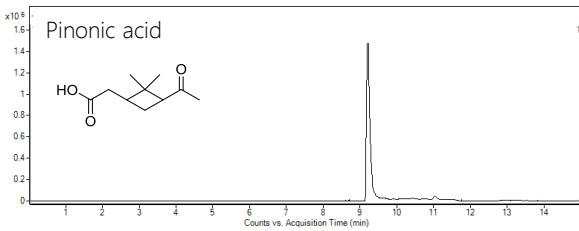
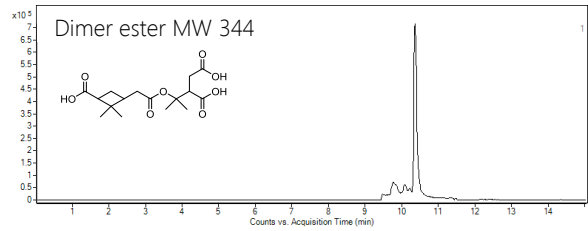
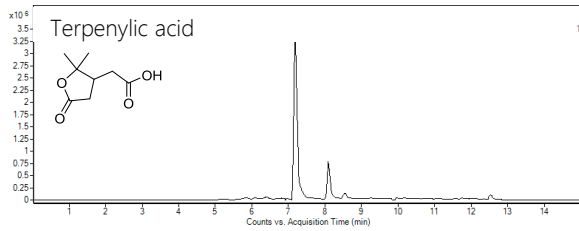
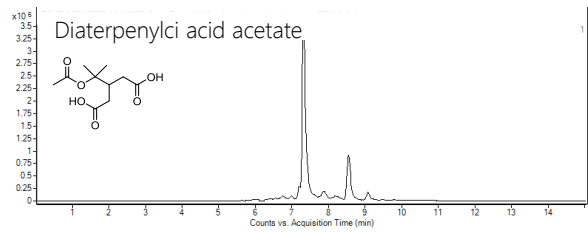
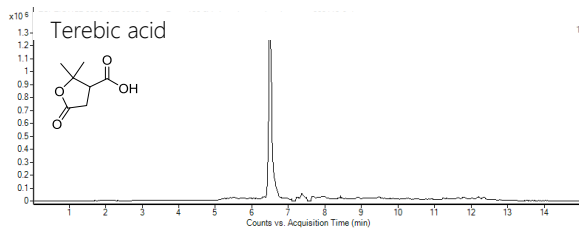
12 \*Current address: Department of Environmental Science, Policy and Management, University of  
13 California, Berkeley, CA, 94720, USA

14

15 Correspondence to: M. Glasius (marianne@glasius.dk) or J. Surratt (surratt@unc.edu)

16

17



18

19 Figure 1S. UPLC-MS extracted ion chromatograms of identified compounds.

20

21

22 Table 1S. Calculated hourly loss rate (%) in the two chambers during Exp. 2, 3 and 10. Sulfur  
23 hexafluoride ( $\text{SF}_6$ ) was injected as an inert tracer into each side of the chamber (Chamber A and  
24 Chamber B) and its concentration was monitored chromatographically with an electron capture  
25 detector throughout the experiments to determine the rate of dilution. No dilution tracer was  
26 monitored after Exp. 10.

Experiment	RH (%)		Temp ( $^{\circ}\text{C}$ )		Hourly loss rate (%)	
	Chamber A	Chamber B	Chamber A	Chamber B	Chamber A	Chamber B
Exp. 2	14	27	28	28	3.60	5.01
Exp. 3	15	46	26	26	2.48	3.87
Exp. 10	21	56	28	28	3.76	3.73

27

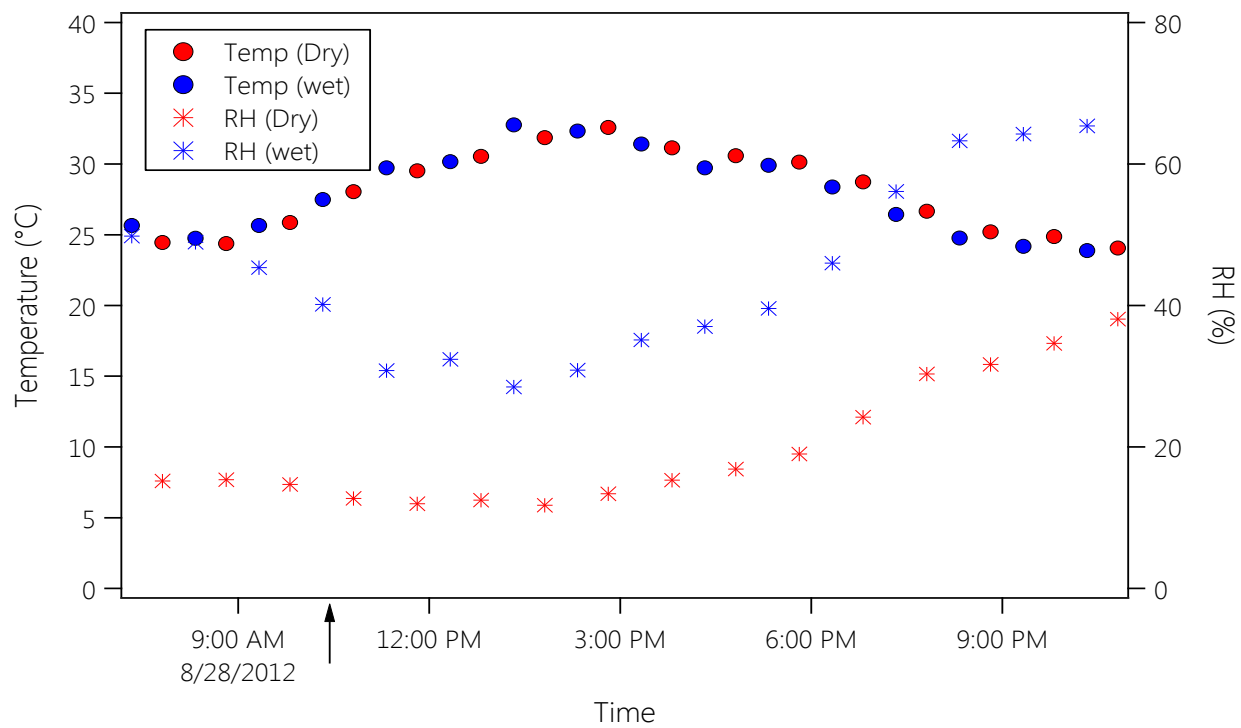
28

29

30

31

32

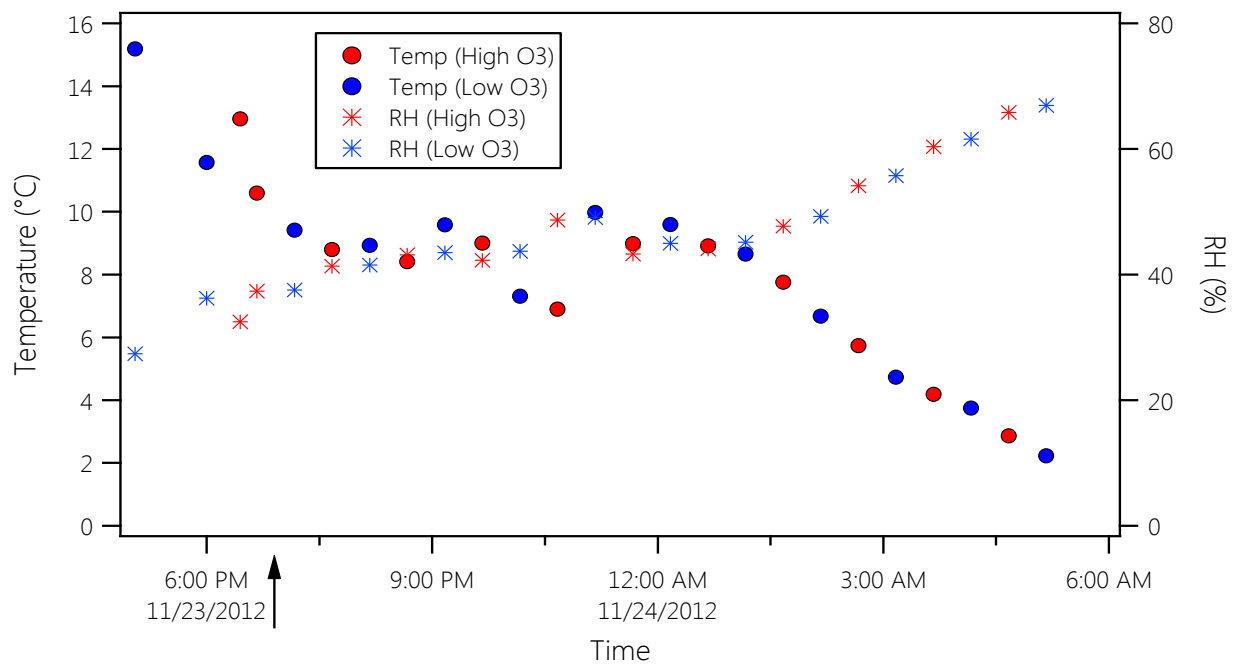


33

34 Figure 2S. Temperature (°C) and RH (%) in the low (Dry) and high (Wet) RH chamber during  
 35 OH-oxidation of  $\alpha$ -pinene (Exp. 3). Injection of  $\alpha$ -pinene is indicated by arrow

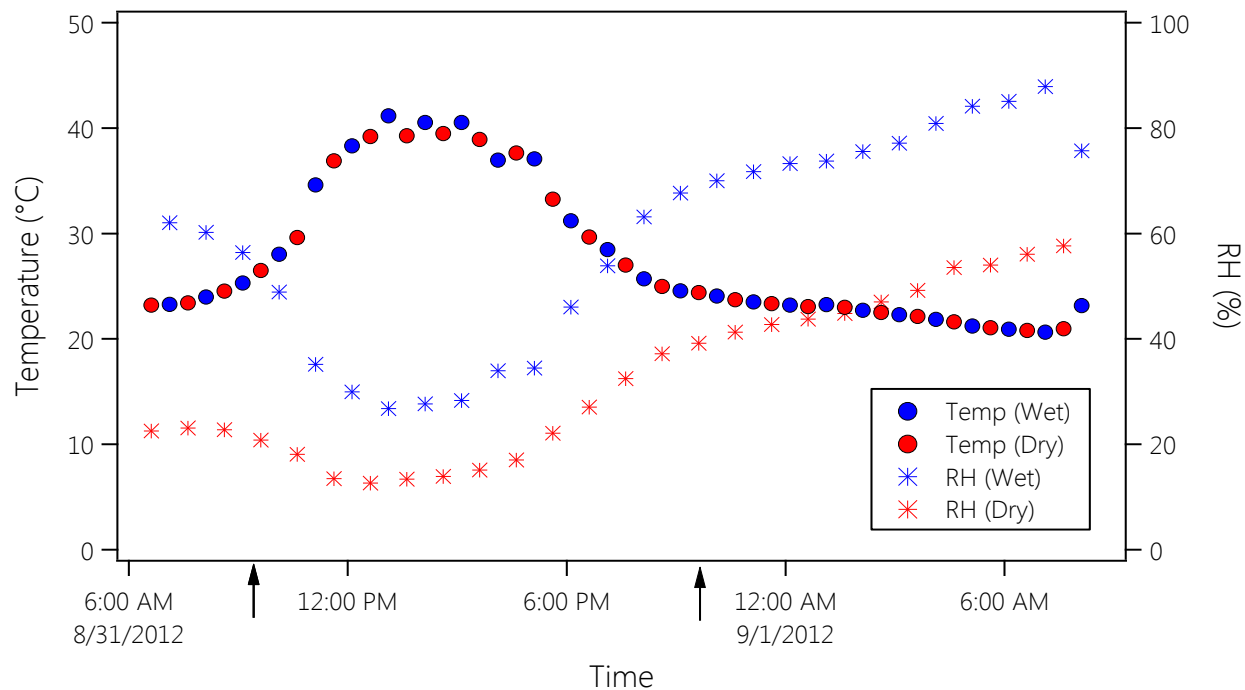
36

37



38

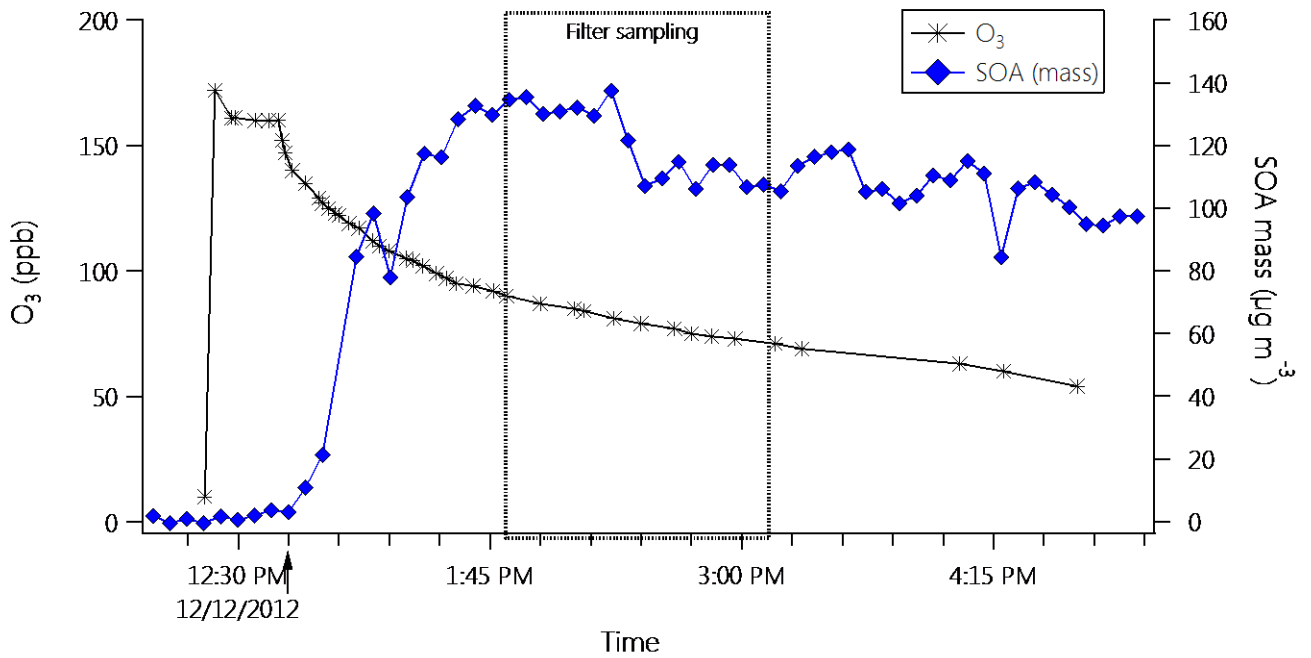
39 Figure 3S. Temperature (°C) and RH (%) in the low (80ppb, blue) and high (170ppb, red) ozone  
40 chamber (Exp. 4.) Injection of  $\alpha$ -pinene is indicated by arrow.



41  
 42 Figure 4S. Temperature (°C) and RH (%) in the low (Dry) and high (Wet) RH chamber during  
 43 initial OH oxidation of  $\alpha$ -pinene followed by oxidation of a second injection of  $\alpha$ -pinene by  $O_3$   
 44 generated during initial oxidation (Exp. 10). First (100ppb) and second (50ppb) injection of  $\alpha$ -  
 45 pinene are indicated by arrows.

46

47



48

49 Figure 5S. Concentration of O<sub>3</sub> (ppb) and SOA mass (µg m<sup>-3</sup>) in the indoor α-pinene ozonolysis  
50 experiment (Exp. 7).

51

52